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Stringer, C. & Laland, K.N., Culture Evolves). *Trends in Ecology and Evolution*  
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### **Making sense of culture**

Review of Whiten, A., Hinde, R.A., Stringer, C. & Laland, K.N. (2012) *Culture Evolves*.  
Oxford University Press.

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18           This volume is a collection of 25 papers originally published as a special  
19 issue of *Philosophical Transactions of the Royal Society* in 2011 [1], which in turn  
20 resulted from a 2010 joint Royal Society / British Academy discussion meeting.  
21 The title, “culture evolves”, can be understood in two senses, and these two senses  
22 provide a loose structure for the volume. The first sense is that “the capacity for  
23 culture evolves by natural selection”. Gone, thankfully, are the days when culture is  
24 defined *a priori* as unique to humans and absent in other species, a definition  
25 which is artificial, anthropocentric and precludes the comparative study of culture.  
26 Consequently, the first eight papers review comparative work demonstrating that  
27 social learning and cultural traditions are far more widespread in the animal  
28 kingdom than was imagined just a few decades ago, occurring in birds, fish,  
29 monkeys, apes, and other mammals. Individuals of many species use social  
30 learning to find food, choose mates and recognise predators; between-population  
31 differences often emerge as a result of shared social information; and these  
32 cultural traditions constitute a major means by which species adapt to their  
33 environments.

34           The next four papers focus on how the capacity for culture evolved in early  
35 hominins, as revealed through the paleoanthropological and archaeological  
36 records. Interestingly, just as the cultural abilities of non-human species have, until  
37 recently, been greatly underestimated, so too it appears have the cultural abilities  
38 of our hominin ancestors. For example, while Acheulean handaxes were once  
39 thought to represent over a million years of technological stasis, recent analyses  
40 have demonstrated considerable regional and temporal variation indicative of  
41 both cultural traditions and cumulative cultural change.

42           At this point the volume shifts to the other sense in which “culture evolves”;  
43 the sense that “the contents of culture evolves through a process of descent with  
44 modification”. Those stone tools made by early hominins can themselves be seen  
45 as evolving over time, forming a second inheritance system intertwining with the  
46 genetic inheritance of their makers. The subsequent eight papers build on this  
47 notion, examining how evolutionary tools (e.g. phylogenetic methods) can provide  
48 insights into how technology, language and social norms change and diversify over  
49 time. The idea that cultural phenomena evolve according to the same fundamental  
50 principles as those governing genetic evolution predates Darwin, yet it is only in

the last few decades that a quantitative science of cultural evolution has emerged [2]. The papers in this section give a taste of some of this work.

The final four papers switch from macro-level cultural evolution to the micro-level, looking at how children acquire the knowledge and skills that constitute the products of their society's cumulative cultural evolution. Children, it seems, have also been underestimated: rather than being passive receptacles of knowledge, they use quite subtle cues to determine whether something is worth learning or not, such as whether the demonstrator is deliberately rather than accidentally doing something, or the demonstrator's past reliability.

As one would expect given their origin in *Philosophical Transactions*, the papers all present authoritative reviews by major players in the field. Scholars looking for a technical overview of the latest research into the origin and evolution of culture will find a wealth of information here. The downside is that they are quite hard-going at times, plus most scholars will probably already have access to the papers online via their institution.

Perhaps the most impressive aspect of the volume lies in bringing such a diverse range of topics together in one place, for which the editors should be commended. Rarely does one find oneself considering the social transmission of stickleback foraging behaviour, followed a few chapters later by historical analysis of socio-political organisation in small-scale Pacific island societies. This breadth necessarily encompasses multiple disciplines, from biology to anthropology, psychology, archaeology, linguistics and sociology. Whereas traditionally such disciplines have had little to do with one another, the evolutionary framework adopted here provides a common language within which to understand these diverse phenomena, from fish foraging to Fijian fiefdoms. The social sciences in particular are in dire need of such an evolutionary framework to synthesise disciplines and provide the quantitative methods that are needed to explain cultural phenomena [2, 3].

As a result of outlining what is now known, it is equally apparent that there is much left to be discovered. While comparative work has closed the gap between human and non-human species, there undoubtedly still is a gap: no other species accumulates as much cultural knowledge as rapidly as *Homo sapiens*. Contributors here suggest answers to this conundrum, from communicative teaching to

foresight to language, but none are definitive. Several make the point, however, that the answer will probably come from linking the two aforementioned senses of “culture evolves”: rather than assuming that the capacity for culture first evolved biologically and then allowed cultural evolution to take off, it is more plausible that the capacities underlying culture coevolved with the increasingly extensive and complex contents of culture. What seems certain is that the interdisciplinary approach exemplified here will be necessary to make this link.

## References

1. Whiten, A., *et al.* (2011) Culture evolves. *Phil. Trans. R. Soc. B.* 366, 938-948
2. Mesoudi, A. (2011) *Cultural evolution: How Darwinian theory can explain human culture and synthesize the social sciences*. University of Chicago Press
3. Richerson, P.J., and Boyd, R. (2005) *Not by genes alone*. University of Chicago Press